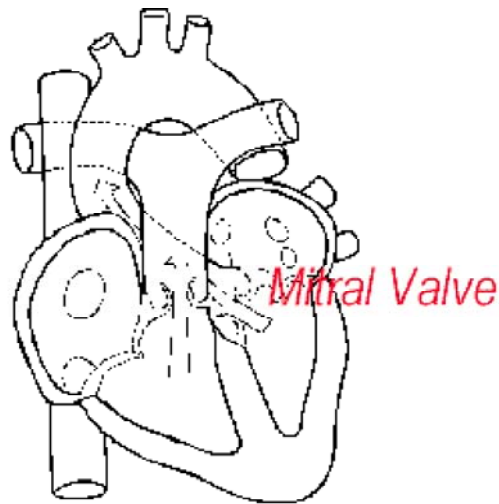
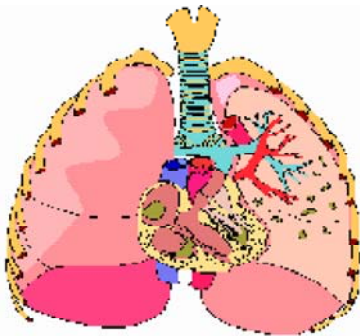




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## HEART DISEASE IN COMPANION ANIMALS: **MITRAL REGURGITATION**



Approximately 1 out of every 10 dogs has heart disease. Mitral regurgitation (MR) or 'mitral valve heart murmur' accounts for nearly 80% of all canine heart disease. It is seen in older dogs, predominately males, and is extremely common in the smaller breeds. The most common clinical signs of MR are: lack of energy, early fatigue, 'hacking' cough, shortness of breath and fainting. Diagnosis is based on clinical history, examination, ECG analysis and chest x-rays. The treatment of choice for MR is valve replacement; however, such surgeries cost over \$65,000 in human patients and are therefore impractical for most pet owners. Medical management directed at slowing the progression of heart disease and reducing clinical signs is the preferred treatment protocol for veterinary patients.

In a normal heart, approximately 60% of the freshly oxygenated blood that enters the Left Ventricle (LV) from the Left Atrium (LA) is ejected into the Aorta and to the rest of the body. In MR patients, this fraction may be halved by 'leakage' through the weakened and faulty Mitral Valve (MV) and back into the LA. This results both in reduced blood supply to the body, but also to a greater than normal volume of blood accumulating in the LA. This will cause the LA to expand or 'bulge' to accommodate the greater blood volume. This chronic stretching of the heart muscle fibers eventually causes abnormal beats and heart failure. Additionally, the body will compensate for the reduced blood flow to the body by *increasing the heart rate* and constrict blood vessels to *increase blood pressure* to maintain normal body functions. This decreased blood supply causes the exercise intolerance we commonly observe in MR patients. If the LA enlarges enough, it will compress and injure the left mainstem bronchus of the lung and cause a hacking cough. As the heart disease progresses, the LV will enlarge to allow more blood to enter the ventricle and, hopefully, to increase the body's blood supply. Unfortunately, this is usually an unsuccessful attempt that results in more severe disease. Many other changes can occur with respect to blood pressure, heart rhythm and pulmonary (lung) blood vessels.

## Mitral Murmur

To increase cardiac output or efficiency, an After-Load Reducer (ALR) such as enalapril is used. Enalapril has many mechanisms, but its primary action that we utilize is the relaxation (dilation) of arterial smooth muscles that decreases the resistance of blood flow out of the LV and into the Aorta, thus increasing blood supply to the body. *ALR's increase cardiac efficiency by decreasing resistance.* Enalapril is the only drug proven to increase the life expectancy of humans and animals with MR.

Other cardiac drugs that are frequently employed include: furosemide (Salix), a diuretic; theophylline, a bronchodilator; digoxin; and nitroglycerin. Our veterinarians will determine the specific treatment regimen that is best for your pet.

*"the most advanced and compassionate in pet health care"*